REMARKS

Claims 50-55 are pending in the present application after the entry of the present response. Claims 56-74 have been withdrawn without prejudice as being drawn to non-elected subject matter. Applicants reserve the rights to prosecute the withdrawn claims and subject matter in one or more related applications. Claims 52 and 53 have been amended to specifically point out and distinctly claim that which the Applicants regard as the invention. Specifically, claim 52 has been amended to recite, in part, an isolated nucleic acid molecule comprising a nucleotide sequence and claim 53 has been amended to recite, in part, a nucleotide vector containing the nucleic acid molecule of claim 50, 51 or 52. No new matter has been added by these amendments. Reconsideration and allowance of the present application in view of the remarks below are respectfully requested.

1. REJECTIONS UNDER 35 U.S.C. § 101

Claims 50-55 have been rejected under 35 U.S.C. § 101 allegedly for lack of a specific and substantial asserted utility or a well established utility. Applicants respectfully disagree with the rejection for the reasons detailed below.

The Examiner contends that the specification fails to provide a specific utility for the claimed nucleotide sequences or the polypeptides they encode. In particular, the Examiner alleges that neither the specification nor the art of record teaches what the polynucleotide of SEQ ID NO: 9 does, nor does it establish a relationship of the polynucleotide of SEQ ID NO: 9 to any specific disease (Office Action, page 4).

The Federal Circuit has stated that "(t)o violate § 101 the claimed device must be totally incapable of achieving a useful result." *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1571, 24 U.S.P.Q.2d 1401 (Fed. Cir. 1992), emphasis added. *See also Cross v. Iizuka* (753 F.2d 1040, 224 U.S.P.Q. 739, 748 (Fed. Cir. 1985) (stating that "any utility of the claimed compounds is sufficient to satisfy 35 U.S.C. § 101") (emphasis added). It has been clearly established that a statement of utility in a specification must be accepted absent reasons why one skilled in the art would have reason to doubt the objective truth of such statement. *In re Langer*, 503 F.2d 1380, 1391, 183 U.S.P.Q. 288, 297 (C.C.P.A. 1974); *In re Marzocchi*, 439 F.2d 220, 224, 169 U.S.P.Q. 367, 370 (C.C.P.A. 1971). Applicants

submit that the Examiner has not established a prima facie case for lack of specific and substantial utility.

As the Examiner has duly noted (Office Action, page 3), the specification has asserted that the nucleotide sequence set forth in SEQ ID NO: 9 encodes a novel ubiquitin ligase comprising an F-box motif. The specification provides numerous specific, substantial, and credible utilities for the claimed nucleic acid molecules comprising nucleic acid sequence of SEQ ID NO: 9 which is the cDNA sequence of FBP5, a novel ubiquitin ligase F-Box protein. Deregulation of FBPs is implicated in cancer development (specification at pages 3, line 3 to page 4, line 7). The claimed inventions indeed have specific utilities which are in contrast with a general utility that would be applicable to any nucleic acid molecules, such as expressed sequence tags (ESTs), which have no specific DNA target. *In re Fisher*, 421 F.3d 1365, 1371, 76 U.S.P.Q.2d 1225, 1230 (Fed. Cir. 2005). For instance, the specification at page 56, line 35 to page 57, line 7 teaches that the nucleic acid molecules of the present invention can be used as hybridization probes for detecting FBP5. The specification on page 57, lines 22-25 also teaches that translocations, deletions, and point mutations of FBP5 can be detected in a sample. Furthermore, the specification on page 56, lines 8-11 teaches that FBP5 is mapped and localized to chromosome position 6q25-26. Accordingly, the nucleic acid molecules of the present invention may be used as chromosome markers for that specific chromosome position as well. Unlike ESTs, since the nucleic acid molecules of the present invention have a specific DNA target, Applicants submit that the claimed invention meets the threshold requirement of specific utility.

The Examiner further alleges that the specification fails to provide a "real world" use and that utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use are not substantial utilities. Applicants submit that an invention nevertheless has substantial utility even though further research needs to be performed. For example, an assay that measures the presence of a material which has a stated correlation to a predisposition to the onset of a particular disease condition would also define a "real world" context of use (MPEP Section 2107.01). Thus, substantial utility is not precluded by further experimentations.

Applicants submit that as discussed above, the nucleic acid molecules of the present invention can be used as probes for detecting FBP5. The specification on page 57, lines 8-25 further teaches that FBP5 can be detected by hybridization assays (e.g., Northern blots, in

situ-hybridization). Translocations, deletions and point mutations of FBP5 can be detected by Southern blotting, FISH, RHLP analysis, SSCP, and PCR. Accordingly, the claimed invention has a "real-world" or substantial utility. Although the present invention may be used in a research setting by a biologist, such use is substantial.

The Examiner further alleges that neither the specification as filed, nor any art of record discloses or suggests any biological or biochemical activity for the protein encoded by SEQ ID NO: 9, such that any utility would be well established for the protein. Applicants further submit that the specification teaches that the protein encoded by SEQ ID NO:9 may be used as an immunogen to generate antibodies which immunospecifically bind FBP5 (page 38, lines 10 to 32). These antibodies can be used to detect aberrant FBP5 localization or aberrant levels of FBP5 in a patient tissue or serum sample (page 56, lines 21 to 27). As such, Applicants submit that the claimed invention exceeds the threshold requirement of having substantial utility.

The above described techniques are well established in the art and hence utilities of the present invention are credible. As stated in the Utility Guidelines, credibility is assessed from the perspective of one of ordinary skill in the art in view of the disclosure or any other evidence of record. Assertion of utility is credible if it is believable to a person of ordinary skill in the art based on the totality of evidence and reasoning provided. Accordingly, not only do the nucleic acid molecules of the present invention, and the amino acid sequences they encode have specific utilities, their utilities are credible and practical.

Since the Applicants have asserted specific and substantial utility or a well established utility for the claimed invention, and the Examiner has not established a prima facie case for lack of specific and substantial utility, Applicants respectfully request that the rejection of claims 50-55 under 35 U.S.C. § 101 be withdrawn.

2. REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 52 is rejected under 35 U.S.C. § 112, second paragraph for indefiniteness. The Examiner alleges that the term "highly stringent conditions" as recited in claim 52, is a relative term which renders the claim indefinite and that the term is not defined in the specification. Applicants respectfully disagree for the reasons set forth below.

According to the applicable case law, the definiteness requirement of 35 U.S.C. § 112, second paragraph, means that the claims must have a clear and definite meaning when construed in the light of the complete patent document. *Standard Oil Co. v. American Cyanamide Co.*, 774 F.2d 448, 227 U.S.P.Q. 293 (C.A.F.C. 1985). The test of definiteness is whether one skilled in the art would understand the bounds of the claim when read in light of the specification. *Orthokinetic Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1 U.S.P.Q.2d 1081 (C.A.F.C. 1986).

The specification as originally filed teaches that the nucleic acid molecules of the present invention can be hybridized to the complement of the DNA sequences that encode the amino acid sequences of FBP genes under highly stringent conditions (*see, e.g.*, the specification at page 19, line 31 to page 20, line 2). By way of example, the specification teaches highly stringent hybridization conditions comprising hybridization to filter-bound DNA in 0.5M $NaHP0_4$, 7% sodium dodecyl sulfate (SDS), 1mM EDTA at 65°C and washing in 0.1xSSC/0.1% SDS at 68°C. Furthermore, such methods of hybridization under highly stringent conditions were well known in the art at the time the instant application was filed (*see, e.g.*, the specification at page 19, line 31 to page 20, line 2, citing to Ausubel *et al.*, eds., 1989, Current Protocols in Molecular Biology, Vol. 1, Green Publishing Associates, Inc., and John Wiley & Son, Inc., New York, at p. 2.10.3). Thus, Applicants respectfully submit one skilled in the art would understand the metes and bounds of the "highly stringent conditions" required for performing hybridization of the nucleic acid molecules to nucleotide sequences encoding FBP5 when read in light of the specification.

As such, Applicants submit that claim 52 is definite and that the rejection under 35 U.S.C. § 112, second paragraph, should be withdrawn.

3. REJECTIONS UNDER 35 U.S.C. § 112, FIRST PARAGRAPH

Claims 52-55 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully disagree with the rejection for the reasons detailed below.

Claim 52, as amended, and its dependent claims 53-55 are drawn to an isolated nucleic acid molecule comprising a nucleotide sequence derived from a mammalian genome

that hybridizes under highly stringent conditions to the nucleotide sequence of SEQ ID NO: 9 and encodes a gene product which contains an F-box motif and binds to Skp1. The Examiner alleges that the specification does not disclose any mammalian DNA sequences for hybridization under highly stringent conditions to the nucleotide sequence of SEQ ID NO: 9. Applicants respectfully submit that the currently pending claims contain subject matter that was described in the specification in such a way to convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.

The factual inquiry of whether there is sufficient written description under 35 U.S.C. § 112 is whether the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, Applicant was in possession of the invention as now claimed. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 U.S.P.Q. 2d 1111, 1117 (Fed. Cir. 1991). Disclosure of sufficiently detailed, relevant identifying characteristics, *i.e.*, structure, physical, and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or combination of such characteristics can provide evidence that Applicant was in possession of the claimed invention. *Enzo Biochem, Inc. v. Gen-Probe, Inc.*, 323 F.3d at 964, 63 U.S.P.Q.2d at 1613 (Fed. Cir. 2002).

Applicants submit that the instant specification provides clear written description for the species encompassed by FBP5. For example, the instant specification, *inter alia*, at page 18, lines 27-28; page 19, lines 12-14, teaches that the FBP5 gene comprises a nucleic acid molecule containing the DNA sequences as shown in Figure 8B (SEQ ID NO:9) and any DNA sequence that encodes a polypeptide containing the amino acid sequence of FBP5 as shown in Figure 8A (SEQ ID NO:10). The instant specification at page 19, line 31 to page 20, line 2 further teaches that the nucleic acid molecule of the present invention hybridizes to the complement of the DNA sequences that encode the amino acid sequences of an FBP protein, such as FBP5, under highly stringent conditions. Such methods of hybridization are well known in the art (*see, e.g.,* Ausubel *et al.*, eds., 1989, Current Protocols in Molecular Biology, Vol. 1, Green Publishing Associates, Inc., and John Wiley & Son, Inc., New York, at p. 2.10.3). Claim 52 is drawn to a genus of nucleic acid molecules that encodes a gene product that contains an F-box motif and binds Skp1. It would be clear to one skilled in the art that not all sequences that hybridize to the complement of SEQ ID NO:9 are

encompassed by the claims – only those that contain an F-box motif and bind to Skp1. One skilled in the art would understand that the species of nucleic acid molecules that are encompassed by the claims are structurally and functionally described.

Moreover, although there are numerous nucleic acid molecules that fall within the scope of the claims and that it is not practical to provide the nucleotide sequences of all of the nucleic acid molecules that are encompassed by the claims, one skilled in the art can readily distinguish the nucleic acid molecules of the present invention from others and can identify many of the species that the claims encompass. Since the law does not require disclosure of a test with every species encompassed by a claim even in an unpredictable art, the specification provided an adequate description of the claimed genus. *In re Angstadt*, 537 F.2d 498, 502-503, 190 USPQ 214, 216 (CCPA 1971). In fact, one skilled in the art can recite the nucleotide sequence of the nucleic acid molecules of the present invention and test the physical, chemical, and functional characteristics of the nucleic acid molecules that the claims encompass. Hence, the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date, Applicants were in possession of the invention as now claimed.

In addition to the support provided in the present specification for DNA hybridization techniques, there was a high level of skill in the art of molecular biology at the time the application was filed. All the methods needed to practice the claimed invention including DNA hybridization techniques were well known and routine in the art. To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail so that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. *See, e.g., M.P.E.P.* 2163 citing to *Moba, B.V. v. Diamond Automation Inc.*, 325 F.3d 1306, 1319, 66 U.S.P.Q.2d 1429, 1438 (Fed. Cir. 2003); *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d at 1563, 19 U.S.P.Q.2d at 1116. Furthermore, what is conventional or well known to one of skill in the art need not be disclosed in detail and, where the level of knowledge and skill in the art is high, a written description question should not be raised. *See, e.g.,Capon v. Eshhar*, 418 F.3d 1349, at 1357 (Fed. Cir. 2005).

Applicants additionally direct the Examiner's attention to example 9, at page 35 of the Synopsis of Application of Written Description Guidelines, available at http://www.uspto.gov/web/patents/guides.htm ("Application Guidelines"). In Example 9 of

the Application Guidelines, the specification discloses a single cDNA that encodes a protein of a particular function. A stringent hybridization was performed and several nucleic acids that encode proteins that perform the same function were isolated. It is stated in the Application Guidelines that a person of skill in the art would not expect substantial variation among species because the hybridization conditions would set forth structurally similar cDNAs. Similarly in the present invention, a skilled artisan would not expect substantial variation among the species because the hybridization conditions as set forth in the claims would yield structurally similar FBP5 proteins. Thus, as in Example 9 of the Application Guidelines, a skilled artisan would reasonably conclude that the inventor had possession of the claimed invention, since stringent hybridization conditions for FBP5 are provided and the claims recite functional characteristics of the nucleic acid molecules of the invention. Since there are high levels of skills and knowledge in the art of molecular biology, one skilled in the art would reasonably conclude that Applicants are in possession of the claimed invention.

Applicants respectfully submit that the requirement of written description is met and respectfully request that the rejection of claims 52-55 under 35 U.S.C. 112, first paragraph, be withdrawn.

4. CLAIM REJECTIONS UNDER 35 U.S.C. § 102

4.1. NCI-CGAP Is Not Prior Art To The Claimed Subject Matter

The Examiner rejected claims 51-55 under 35 § U.S.C. 102(b) as allegedly being anticipated by GenBank Accession No. CB229742 of NCI-CGAP (http://www.ncbi.nlm.nih.gov/ncicgap, National Cancer Institute, Cancer Genome Anatomy Project (CGAP), Tumor Gene Index, 1997; "NCI-CGAP ").

At the outset, Applicants submit that the present application claims priority to U.S. Application Serial No. 09/385,219, filed August 27, 1999, now U.S. Patent No. 6,720,181, which claims priority to U.S. Provisional Application Serial No. 60/098,355 filed August 28, 1998. Support for the present claims is found in U.S. Application Serial No. 09/385,219, filed August 27, 1999, now U.S. Patent No. 6,720,181. The nucleic acid sequence of GenBank Accession No. CB229742 did not become available to the public until February 10, 2003, which is after the priority date of the present application. Hence, NCI-CGAP is not prior art to the claimed subject matter. Accordingly, Applicants respectfully submit that the

rejection under 35 § U.S.C. 102(b) in view of NCI-CGAP should be withdrawn.

4.2. The Rejected Claims Are Not Anticipated by Bonaldo

The Examiner rejected claims 51-55 under 35 § U.S.C. 102(b) as allegedly being anticipated by Bonaldo *et al.*, (*Genome Res.* 1996. 6(9): 791-806; "Bonaldo"). A claim is anticipated only if each and every element as set forth in the claim is found in a single prior art reference. *Verdegaal Bros. v. Union Oil Co.*, 814 F.2d 628 (Fed. Cir. 1987).

Bonaldo fails to anticipate independent claims 51 and 52, or their dependent claims 53 to 55 because it does not teach each and every element of the claims. Specifically, Bonaldo teaches normalization and subtraction of cDNA libraries. Bonaldo does not teach an isolated nucleic acid molecule comprising a nucleotide sequence of SEQ ID No: 9. Also, Bonaldo does not teach an isolated nucleic acid molecule comprising a nucleotide sequence derived from a mammalian genome that hybridizes under highly stringent conditions to the nucleotide sequence of SEQ ID NO: 9 and encodes a gene product which contains an F-box motif and binds to Skp1. Accordingly, Applicants respectfully submit that the rejection under 35 § U.S.C. 102(b) in view of Bonaldo, should be withdrawn.

The Examiner cited GenBank accession No. BM675277, the nucleic acid sequence of which did not become available to the public from GenBank until February 27, 2002. Hence, GenBank accession No. BM675277 is not prior art to the claimed subject matter. Accordingly, Applicants respectfully submit that the rejection under 35 § U.S.C. 102(b), in view of Bonaldo or GenBank accession No. BM675277, should be withdrawn.

4.3. Williams Is Not Prior Art To The Claimed Subject Matter

The Examiner rejected claims 51-55 under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,964,868 issued to Williams et al. ("Williams").

As discussed above, support for the present claims is found in the parent application, U.S. Application Serial No. 09/385,219, filed August 27, 1999, now U.S. Patent No. 6,720,181. Williams was a National Stage Application of PCT/US99/01619, which was filed January 28, 1999. The critical reference date of Williams is when the applicant has fulfilled the requirements of paragraphs (1), (2), and (4) of 35 U.S.C. § 371(c), *i.e.*, March 10, 2000. According to MPEP 2136.03(III), international applications which were filed prior to November 29, 2000 may not be used to reach back (bridge) to an earlier filing date through a

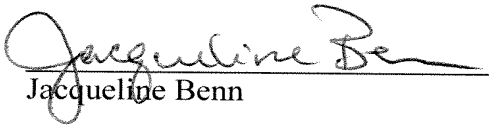
priority or benefit claim for prior art purposes under 35 U.S.C. § 102(e). Hence, Williams is not prior art to the claimed subject matter. Accordingly, Applicants respectfully submit that the rejection under 35 § U.S.C. 102(e) in view of Williams should be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that the formal objections have been obviated and rejections to the pending claims should be withdrawn. Applicants respectfully submit that all claims are now in condition for allowance. The Examiner is invited to call the undersigned attorney if a telephone call could help resolve any remaining items.

Respectfully submitted,

Date: June 1, 2007



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